

W5YI

America's Oldest Ham Radio Newsletter REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable.

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Vol. 22, Issue #21

\$1.50

PUBLISHED TWICE A MONTH

November 1, 2000

Phase 3D Launch Now Set for "Mid-November"

AMSAT News Service reports the launch of the next-generation Phase 3D Amateur Radio satellite has been delayed. The European space agency, Arianespace, had tentatively planned to launch Phase 3D and three other secondary payloads on or about October 31 aboard an Ariane 5 rocket. The space agency has now scheduled mid-November as the earliest liftoff date for its next Ariane 5 mission – designated Flight 135. But we have reason to believe that the launch date is Tuesday, November 14.

"This marks a last-minute change in the schedule," Arianespace said. As a result, another mission, Flight 134, originally scheduled for after Flight 135, has been moved up to October 27th. It will orbit the Europe*Star 1, the first telecommunications spacecraft for the new international satellite operator Europe*Star Limited.

The launch campaign for Flight 135 began at Europe's Spaceport on Monday, September 18 – only days after the liftoff of an Ariane 5 on September 14 for Flight 130. Flight 135 will carry the Pan-AmSat PAS 1R telecommunications satellite and three piggyback payloads: AMSAT P3D, STRV 1C and STRV 1D. These last two satellites are British Space Technology Research Vehicle microsatellites. A new tentative launch date for Ariane Flight 135 has not yet been announced.

Flight 135 will be Arianespace's fourth commercial mission with the new Ariane 5 heavy-lift

launcher in less than a year. It will mark several firsts.

This mission will be the first use of the ASAP-5 (*Ariane Structure for Auxiliary Payloads*) platform, which cradles smaller multiple mini- or micro-satellites as secondary "piggy back" payloads.

Flight 135 also is to be the initial liftoff performed from a new Ariane 5 mobile launch table, which recently was qualified for service. It is basically a roll-about platform which eliminates the need to transfer the rocket to a launch pad. Excellent photos of the Mobile Launch Table and other Ariane 5 photos can be found at <http://www.arianespace.com/news_missionupdate135-1.html>.

Arianespace's French Guiana (South American) launch complex at the Kourou Spaceport is one of the world's most modern and was built by Europe specifically to serve the new Ariane 5 heavy-lift vehicle. It can handle a launch rate of up to ten Ariane 5 missions per year, with a streamlined launch campaign lasting only 20 working days. The Ariane 5 can handle a GTO (geostationary transfer orbit) payload weighing 7.5 tons!

The spaceport is situated close to the equator at 5.3 deg. North latitude to more cost effectively place satellites in geostationary orbit. The agency launches more than half of the world's satellites -- about one every three weeks.

THE W5YI REPORT [Pub. No. 009-311] is published twice monthly by The W5YI Group, Inc., 2000 E. Randal Mill Road # 608-A, Arlington, TX 76011
SUBSCRIPTION RATE: (U.S., Canada and Mexico) One Year (24 issues) \$24.50 • Two Years: \$45.00 • Three Years: \$64.00. • Tel. 817/461-6443

Foreign Subscriptions via Air Mail: \$39.50 per year. (Payment may be made by Check, Money Order, VISA or MasterCard payable in U.S. funds.)
Periodicals Postage paid at Arlington, TX. POSTMASTER: Send address changes to THE W5YI REPORT, P.O. Box 565101, Dallas, TX 75356

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AMSAT P3-D launch campaign started at the launch site in Kourou on September 11th with the arrival of the various launch integration team members from Germany, United States, Belgium, Czech Republic and Finland.

Several excellent photographs (64 in all) of the launch site at Kourou and the final P-3D assembly are posted to the AMSAT Germany website at: <<http://www.amsat-dl.org/launch/>>. Another 20 photos showing the arrival of P-3D at the final assembly building in Kourou and the Ariane 5 heavy lift rocket can be found at: <<http://www.amsat-dl.org/p3dkru/>>.

AMSAT-DL Executive Vice President Peter Guelzow, DB2OS, indicated to ANS that the delay is due to one of the payloads scheduled to travel into space with Phase 3D not yet arriving at the Spaceport, French Guiana, but was due to be there "very shortly." Once on-site, the payload still must undergo a detailed launch preparation campaign similar to the one Phase 3D now is completing. ANS did not indicate which of the other payloads was delayed.

We have learned, however, that the late arriving spacecraft is the primary payload, the PAS-1R Atlantic Ocean Region satellite. It arrived in Kourou, French Guiana on October 12th. It will replaces PAS-1, the communications satellite placed in orbit 12 years ago that inaugurated the multi-billion dollar commercial international satellite communications industry.

Before the launch of PAS-1 in June 1988, international satellite communications services were controlled by a global government-run satellite monopoly. PanAmSat Corp's., (Greenwich, CT) website discloses that the "...PAS-1R, when launched from the Guiana Space Center on November 14, will support PanAmSat customers with a range of powerful new transponders that will deliver video, data and Internet services to the Americas, Europe and Africa..." See <<http://www.panamsat.com>>.

Guelzow reports that Phase 3D's fueling operations now are complete. Earlier, Phase 3D team members checked out the RF, computer, electronic, and mechanical systems for the satellite before buttoning it up for the last time prior to launch. Phase 3D's solar cells were fitted and tested using high-intensity lights to verify electrical output and battery charging capabilities.

Phase 3D soon will be moved into the final assembly building at the European Spaceport, where the satellite will be mated to the Ariane 5 launch vehicle.

For more information, visit the Phase 3D launch team's website, <<http://www.amsat-dl.org/launch/>>, the AMSAT-NA website, <<http://www.amsat.org/>> and the Arianespace website <<http://www.arianespace.com/>>.

(Credit: ANS, ARRL, Arianespace, AMSAT-DL and PanAmSat.)

UNLICENSED "FREE RADIO AUSTIN" REJECTS LPFM

FCC raids and closes pirate 97.1 FM station

"Americans believe our Constitution guarantees our rights of free speech and press. Without access to the means of mass communication, those rights exist in name only. Our so-called free press is not free. It is owned by powerful corporate interests who use the public airwaves to enrich themselves at our expense." [from FRA Mission Statement]

An article published in the Wednesday, Oct. 11, edition of the *Austin American-Statesman* newspaper in Austin, Texas reports that Free Radio Austin has been shut down by the FCC. The FM broadcast station transmitter was apparently buried in the ground.

"It took a shovel and lots of muddy digging," the story said. "FCC agents, police and a U.S. marshal seized equipment from Free Radio Austin, which had been broadcasting at 97.1 FM since April 1999."

"An FCC agent dug four feet down into the low-power station's yard at 2939 E. 14th St. in Austin to find the radio transmitter, said Chris Womack, one of the station's founders" who was known as "Marmot" on the radio. He called the raid "...an unreasonable restriction of the rights of free speech."

Free Radio Austin broadcast music as well as programs about animal rights, the erosion of civil rights, and politics. "An FCC spokesman declined to comment on Tuesday's raid, the second this month against an unlicensed, low-power radio station in Austin. Agents closed Radio One at 94.3 FM on Oct. 4."

Free Radio Austin had previously rejected the FCC's new Low-Power FM licensing program as a way to legally operate. They said LPFM "...failed to meet the standards set forth in Free Radio Austin's Mission Statement," and that it "does not live up to our Mandate from the Public."

FRA also said it believed "The FCC is not serious about returning stolen bandwidth to the people, who ultimately own it, because of heavy pressure from the NAB." Adding that LPFM "will allow various 'single-agenda' groups to own stations such as religious groups, political groups, and ethnic/minority groups" whom FRA said were not "free radio" or "free voices." They demanded that the broadcast model be "Collections of individuals from the Community, with their own shows, free to express their opinions without agendas or editorial censorship."

They pledged that Free Radio Austin would continue to broadcast unlicensed calling the FCC's LPFM scheme is "...a direct insult to the Free Radio Movement and to the Citizens of the United States who own the Airwaves. We will not stop our direct action and civil disobedience until the FCC comes to the negotiating table, face to face, with Free Radio Broadcasters around the nation and negotiates a better agreement."

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CUTTING EDGE TECHNOLOGY

Plastic parts on demand. Engineers are designing and building their own custom parts in 3-D through the use of liquid plastic resin and ultraviolet light. The special plastic resin hardens into a solid when hit with UV light, so after a layer of a particular shape is created, the object is lowered back into the pool of liquid resin and re-hardened with another layer. Computers help keep track of all points in three dimensions, and the technique works well enough to allow doctors to create special implants for replacement bone joints. Paleontologists are even creating "copies" of ancient bones and other artifacts for colleagues to study, while the original is safely locked away.

Digitally enhanced skiing looming on the horizon? It's possible to let skiers control the stiffness or hardness of their "smart skis" on the fly with the push of a button mounted in their poles. (Now, if they could just use GPS to tell skiers when a tree is coming...)

New soldering iron turns up the heat. The M. M. Newman Corp.'s Antex G/3U miniature soldering iron uses a new concept: it places the heating element directly at the tip of the iron, rather than in the handle. This lets the tip heat up faster and concentrates the heat directly where you need it. It also makes for a cooler handle! Several dozen different tips are available.

Infrared cameras call the shots. Since every object not at absolute zero (the coldest possible temperature) emits some heat, sensitive infra-red cameras can pick up that heat and display it in the visual realm. Some professional tennis tournaments are taking advantage of this property by using an IR camera to judge tough line calls. When a tennis ball hits the court, it briefly leaves behind a "footprint" of heat that the camera picks up. When shown on a video monitor in conjunction with the lines on the court, judges can decide in real time if a particular tennis shot was inside or outside the line.

Drying with radio waves. Some industrial material cleaners dry out items after washing and cleaning by heating them with RF waves. RF drying works well on non-metallic items by making water droplets vibrate fast enough to evaporate. This technique is sometimes also used to pre-heat plastics, prior to forming.

Spray-painting with electricity. Electrostatic painting is one method of creating the professional finishes you often find on high-end and industry products. The object to be painted is electrically grounded, while the paint particles to be sprayed are given a negative charge. This difference in electrical charge attracts the paint droplets to the object being painted. Because of the attraction, more paint particles reach the surface than usual, and a wraparound effect makes over sprayed paint particles curve around behind the object to land on the side or back surface. Not only that, but as paint builds up, it insulates portions of the painted surface and makes particles still being sprayed become more attractive to the surface regions that haven't yet been painted. All of this results in a smoother, more even coat.

Time to tune up the lab equipment! A service called Calibrationclub.com offers free reminders to people through e-mail when it's time to have a particular piece of measuring equipment calibrated. In some parts of industry, periodic recalibration is mandatory... but it's often overlooked. By logging onto the service and providing information on the lab's or shop's instruments, you let someone else remind you when it's time to re-check them.

Control tower for machine tools? The larger machine-tool manufacturers are working on improving troubleshooting capabilities for the computers that operate lathes and mills in machine shops. It used to be that if your machine broke down, you had to call for a service representative -- and even then, it was more than likely that he couldn't fix it on the spot. Today, however, with communications links built into the machines, service reps can literally connect on-line to a troublesome machine-tool control and query the computer for diagnostic information. With that downloaded, the service rep can recommend a course of action and even know what spare parts to provide. Companies say it may soon be possible to control dozens of such machines from a single room, from great distances. One central headquarters could oversee machine-tooling operations for shops in several states (or countries) all at once.

Zero-Force buttons reduce carpal-tunnel syndrome. In applications where repetitive button-pushing is required, continuous strain on arm muscles may lead to health problems. That's due to the usual mechanical resistance built into the switch itself. Rockwell Automation now offers touch buttons that avoid mechanical force altogether. They rely on field effect sensing

only, so they last much longer and are easier to activate.

How much RF is too much? Find out with a microwave radiation monitor. Offered by General Microwave Corp., the Model 60A radiation badge can be worn like a nametag while you're busy working in a powerful RF environment. When accumulated RF exposure reaches a predetermined level, an LCD bar graph indicates the intensity and a buzzer goes off. It covers 1 to 40 GHz.

LED or incandescent bulb? It depends upon the application. In avionics, it costs a great deal of money to track down electrical problems in a cockpit -- and particularly aggravating to find that a brand-new bulb burned out in just a few weeks, or is intermittent. Light-emitting diodes don't have a vibrating filament and last for years; but they don't have quite the same viewing angle in illuminated switches that incandescent bulbs do, and sometimes aren't quite as bright. LEDs tend to throw light in a much narrower angle, so it takes more LEDs to do the job of one ordinary bulb.

Think quickly: How many motors are in your car? With automatic windows, seats, windshield wipers, door locks, sun roofs, side mirrors, headlight covers, etc., the average new automobile makes use of 80 to 100 electric motors.

Visible/IR camera all in one. I.S.I. Group's VideoTherm 2000 Series of video cameras combine visible light with temperature-sensitive infrared. Push a button and the viewer automatically switches from visible light to IR, letting you see "hot spots" that are otherwise invisible. Combining two technologies in one camera saves money and time.

Driving video walls. Quantum Data's QC DB8 video distribution buffer accepts one input video signal and drives up to eight outputs with it, letting users test banks of monitors all at once, or lets teachers present information to every student, or give passers-by in a trade show a good look at data on display. Additional video distribution buffers can be chained together, driving up to dozens of monitors at once.

"Please return your viewing glasses to the flight attendant." We may eventually see airlines passing out video displays for people to wear on glasses during flights. They're already available, though not inexpensive enough yet to be widespread. They focus images directly into the pupil. They could be issued to laptop computer users who are concerned about privacy. It would cost less for maintenance to maintain than a

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plane full of color LCD units on all the seats.

■ **Electric water treatment.** One method of cleaning up waste water involves electricity. Called "electroflotation," it fills the water with bubbles that are electrically charged. When water has electricity passing through it, electrolysis breaks down the liquid into its gaseous components: hydrogen and oxygen. As these gas bubbles rise through the dirty water, they "latch on" to particulates and other waste matter, carrying it up to the surface -- where it's all skimmed off. This treatment process removes paint, oil, and several kinds of metals.

■ **Looking for a deal on used scientific laboratory equipment?** Check out "Einstein's Garage," a public auction web site that buys and sells brand-name lab equipment and supplies. There's plenty of surplus that's still in the box, "gently used," or "cosmetically challenged." <<http://www.einstinegarage.com>>.

■ **Bar-coded prisoners.** Law enforcement agencies are switching over to using wristbands with bar codes on them for keeping track of inmates. One scan with a laser wand is all a police officer needs to identify an inmate and know everything about him: why he's there, how long he's supposed to be there, where he's been so far, any medical problems guards should know, etc. It's faster and safer than the old methods, so it's less likely an inmate will be released too early because of a paperwork snafu.

■ **Latest projector features.** The latest high-tech video projectors used in boardrooms and classrooms make use of infrared receivers located all around the projector, so the instructor can send commands to it from any direction. Some projector remotes also include a laser pointer.

■ **Instant "drug store."** Just like Polaroid in the early 1950s, the latest camera by an Olympus and Polaroid partnership offers instant photographs... but digitally. The C-211 ZOOM does not use film in the conventional sense. It has a built-in photo printer, using silver halide film instead of paper. No computer is required. You can preview your resultant snapshots before printing. You can also store photographs digitally for archiving purposes.

■ **Digital theater projectors are almost a commercial reality.** Engineers haven't quite worked out all the imperfections yet, but they're getting there. It will be at least ten years before digital movie projectors see popular distribution, but by

then they will change the way Hollywood distributes their films. Today's movie film prints are expensive, very heavy, and susceptible to breakage. A digital movie could be distributed on an optical disc or by satellite link.

EMERGING COMMUNICATIONS

■ **"StarBand" broadband satellite service to launch in Radio Shack stores next month.** StarBand Communications (McLean, VA), formerly Gilat-To-Home, will begin offering the first two-way consumer Internet access via satellite in 3,000 Radio Shack stores. The service will also be available bundled with EchoStar's 500-channel DISH Network.

The StarBand announcement follows the unveiling of the Microsoft Internet Center@RadioShack. Customers who visit stores beginning in November will get a look at the always-on, high-speed Internet satellite connection.

With a sizeable investment from Microsoft and EchoStar, Starband Communications is a new consumer-focused company formed by the Gilat Satellite Network to deliver two-way broadband satellite Internet access to consumers. As you might expect, MSN (Microsoft Network) will be the primary ISP for Starband subscribers.

While the Starband Communications is new, the Gilat Satellite Network is not. They are a world leader in satellite-based wide-area communication network technology, with over 200,000 satellite dishes installed throughout the world. The company provides satellite-based end-to-end networking to businesses (including the U.S. Postal Service) and rural telephone service to customers across six continents. <<http://www.gilat.com>>.

The "Starband" Internet system consists of a 24x36-inch oblong satellite dish mounted on your roof. Two standard coaxial cables connect the dish to a PC in your home, which is either equipped with transmit/receive cards or connected to an external satellite modem.

The technology supports download speeds of up to 400 kilobits per second, or about 10 times faster than a 56-kbps modem. Upload speeds are about 150 kbps, still speedier than modems. We heard that the new Starband satellite access will cost \$60 monthly plus a \$299 satellite dish installation fee and a one-year commitment to MSN -- more costly than DSL or cable modem service.

The Starband system both sends re-

quests to the Internet and receives the requested Internet content via a Ku-band satellite in geostationary orbit approximately 22,300 miles above the equator. The satellite, in turn, communicates with Starband's hub facility, which has a direct connection to the Internet.

The result is two-way satellite Internet service that provides high-speed, always-on access on par with other broadband technologies, such as cable modems and DSL. No telephone connection is needed. The service will be available in any location that has a clear unobstructed view of the satellite located in the southern sky.

Hughes Electronics, operator of the popular DirecTV service, expects to make DirecPC a two-way satellite solution this fall. Other firms are also developing two-way satellite access for homes.

Analysts say the service will be particularly popular among the 30 million rural Americans who can't get high speed access now. They expect 2 million people will be surfing by two-way satellite by 2003, compared to 10 million cable and 9.5 million DSL customers.

■ **There are rumblings that the nation's largest DBS (Direct Broadcast Satellite) company, DirecTV may be in the process of being sold.** About 10 million U.S. households subscribe to the service, up from less than one million just five years ago. Hughes DirecTV has 65% of the satellite-broadcast market. Their growth has been fueled by the public's dissatisfaction with poor-quality, costly cable-TV service. The rumors are that News Corp., headed by Rupert Murdoch is interested but no one is talking.

DBS operators want to replace their set top boxes with an upgrade containing more powerful CPUs and memory to allow Internet access, personal video recording, e-commerce and interactive channels.

■ **A Japanese research telecom engineer has invented a device he calls the "Whisper Finger Phone"** -- a wristband phone that lets people hear incoming calls by sticking a finger in their ear. The band houses a tiny microphone, plus a device that converts audio signals into vibrations.

To hear incoming calls, the wearer puts a finger in one ear. The caller's voice is converted to vibrations, which travel through the hand, the finger and into the ear canal. The wearer talks back via the wristband's microphone. He hopes that Whisper would come to market by 2005.

■ **The Voice of America is still providing news and entertainment to the**

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world. Curiously, it is against the law for American citizens to have access to copies of programs that have been broadcast on V.O.A. until a certain number of years have passed. You also can't get programming information through the mail if you are a taxpayer in this country. But thanks to the Internet, you can get that scheduling and frequency information (and get it faster!) by logging on to www.voa.gov.

■ **73 de Pioneer 10?** One of the most distant man-made objects from Earth, the Pioneer 10 probe -- the first spacecraft to reach Jupiter -- is now so far away from our solar system that ground controllers are having difficulty tracking its radio signal. Not only is Pioneer 10 speeding away from us, but its electrical generators are also slowly giving out. With little data to transmit back to Earth except on-board equipment readings and solar wind measurements, NASA's Deep Space Network doesn't keep close tabs on the robot spacecraft as it once did. Keeping in touch with Pioneer 10 continues to be a challenge, as the faint radio signal reaching us is almost totally buried in electrical noise. It will only continue to get worse. The current received signal strength is -178 dBm.

■ **Satellite feedback.** Orbiting telecommunications satellites don't want their incoming radio receivers to be overloaded by powerful commands from the ground. But ground controllers can't uplink to the "bird" if their transmitted signal isn't powerful enough, either. The satellite provider normally recommends the optimum RF power level, but that's used for clear days. What if it's raining or too cloudy? Some satellite links make use of an automatic power-adjustment feature. The satellite sends down a steady beacon signal, which receiving stations use as a power reference. During bad weather, the strength of this reference signal decreases. Ground receivers then automatically use this decrease in reference signal to adjust the ground station's uplink power level.

■ **Voice commands for new cars.** Partially because of laws in some areas that prevent the use of mobile phones while driving, some high-end cars (such as Jaguars and Lincolns) in the upcoming model year will offer voice input. Drivers can keep their hands on the wheel and their minds on the road, yet still converse over the phone and use the on-board navigation system.

■ **Sharp says all of their home TV receivers** will be based on liquid-crystal display technology (instead of cathode-ray tubes) by 2005.

■ **Tracked by TV.** A patent has been awarded to an inventor who created a method to allow mobile-phone users to be tracked by other people via cable TV. By sending a query to a cable TV company, the network sends a request to a particular person's next-generation mobile phone. The resulting "ping" lets the network know precisely (through GPS) where that phone (and therefore the person) is, and the resulting location is displayed on the other person's TV set.

■ **Heat-based radio receiver.** The "Lufo" RadioLamp from Vocalux (a European firm) looks like a hurricane lantern. In fact, it is a hurricane lantern. It also contains an AM/FM/short-wave radio receiver that gets its power from the heat generated by the lamp. Lufo uses a thermoelectric converter to change the heat energy into electrical energy. Other electrical devices can be connected to the device, so they can be powered, as well.

■ **"Your table is ready."** Some of the higher-end restaurants are notifying their customers by cell phone and/or pager when their tables are ready. Rather than keep people waiting in a crowded lobby, the restaurants take down people's phone numbers for pagers and mobiles. In some cases, the restaurants even lend people a pager for this purpose. In areas where there are other interesting things to walk by and see while waiting for the food, people can take in more of the sights and still make dinner.

■ **Why make a tiny HDTV display?** The LightCaster, by Display Tech, measures only 0.78" diagonally -- about the size of your thumb. The color LCD, though small, is bright enough and sharp enough to have its HDTV image magnified and projected. The LightCaster makes HDTV receivers smaller, lighter, and cheaper.

COMPUTER INFO

■ **Application software to be stored on the Web. Internet to become a PC's hard drive** -- Microsoft Corp. has bought one-quarter of rival Corel Corp., the cash-strapped Canadian firm that makes WordPerfect, CorelDraw and other software. Microsoft purchased 24 million shares (\$135 million) of non-voting stock and will have no seats on Corel's Board or control of the company.

The two companies will also settle unspecified legal issues between them and work together to develop applications based on Microsoft's Internet-based ".NET initia-

tive" which looks toward moving applications to the Web.

Unveiled last summer, the Microsoft .NET initiative will make Microsoft's most popular software - including elements of the Windows operating system - available for download over the Internet, freeing it from the hard drives of personal computers.

Since no storage capacity is needed, software can work over a variety of devices, including the "smart" cellular telephones, handheld computers and streamlined Internet "appliances" that researchers predict will be the most common way people access the Internet in coming years. Microsoft's .NET platform should be available by the end of 2001.

■ **PC Sales Growing, But Prices Down**

According to the Consumer Electronics Association, unit sales of personal computers will increase to 16.8 million this year, up from 14.9 million a year ago. Sales dollar volume will be about \$16.8 billion versus \$16.4 billion in 1999. The average cost of a PC continues to plummet ...to about \$1,000 this year. The decline will escalate further in the coming years as Internet appliances (which are expected to cost less than half as much) become popular. Ninety percent of households that own a personal computer, only use it for e-mail or accessing the Web - something that Web machines can easily accomplish at less money.

■ **Are you "burning" your own CD-ROMs? Watch out -- some last longer than others.** There are three main types of programmable CD-ROM discs, according to the dye used in manufacture: blue, green and gold. Green types are particularly susceptible to data loss due to sunlight and heat, while gold discs are the best for long-term archival storage. A good rule of thumb is to hold a new, blank disc up to the light; if you can see lots of holes through it, it's not good enough for your data.

■ **Got a pile of 35mm slides?** How'd you like to save their images, yet get your valuable shelf space in the attic back? Scanners built for 35mm slides are now available. They let computer users drop in a slide, push a button, and the black-and-white or color image is scanned into your PC for archival storage. Museums, astronomers, scientists and engineers are already using these scanners to keep their old data while freeing up shelf space. 100 trays of slides won't fit in a desk, whereas a couple of CD-ROMs will. You can also make copies of any image and transmit them to anyone else on the Internet for no cost.

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■ **Watch out if you've got a company notebook computer!** One of the latest methods hackers are using to get access to large computer networks is to send a "free game" through the Internet to people who've been issued laptop computers that are normally used to access the companies' networks. Said free electronic games actually contain hidden "trap doors" that, when opened, let hackers use the laptop computers as gateways to the big company networks. The laptop owner isn't aware of this. Yet another reason not to accept computer files from someone you don't know.

■ **The no-prototype car may soon be here.** Boeing designed and built the 777 Jet without building a prototype, thanks to computer-aided design and manufacturing. That was because it made more economic sense to do it that way; it's not often the same with automobiles, where prototypes are the rule rather than the exception. But with computing power increasing every day, the big auto manufacturers are working towards design and manufacturing of commercially available cars without having to make any prototypes -- thus saving money.

■ **Long-lasting digital printouts.** Epson, long established in the computer printer industry, has released a new type of ink that's guaranteed to last for at least 10 years without fading if it's printed on glossy paper, twice as long if printed on paper with a matte finish. Many computer printouts have been known to fade much more quickly than ordinary images, so this breakthrough is welcome -- especially the new pigment-based inks that are designed for archive use; these are guaranteed to last for at least 150 years!

■ **"Please say the name of your destination."** Voice-recognition systems that accept voice inputs from the general public must be programmed to accept not only the proper names for particular items, but also whatever other popular or slang names people tack onto them. For instance, when answering a travel menu, a traveler may say "Los Angeles International Airport," "Los Angeles," or "LAX." People do not want to have to guess what the computer wants to hear, so smart human-factors engineering programmers must anticipate these labels.

■ **Why fix it?** Desktop personal computers are being priced so low these days that it's often cheaper to replace a broken one, rather than fix it. Laptop computers remain expensive enough, however, that it's worth a repair shop's time to tinker with it.

■ **Do you "telecommute" to work?**

If so, you're definitely not alone. One recent survey calculates that about 6.8 million Americans do office work from home, thanks to computers, modems, and the Internet.

■ **Can you type in the dark?** Not everyone can touch-type; that's why IBM offers an LED on the display of one of their newest laptop computers. It throws light on the keyboard, allowing the user to see all of the keys in the dark.

■ **New life for old board games.** Many of the classic board games we played when we were kids (Life, Monopoly, Clue, etc.) have been upgraded and released as software packages for personal computers. New features in the computer versions let you see the game board's playfield as the play pieces "see" it, or you can change perspectives whenever you like. You can play with other players over a local area network or through the Internet. (And no one has to step on the game pieces in the dark with their bare feet!)

■ **Ugly colors.** Web site designers have caught on to the fact that some colors do not translate well from paper to video. Brown is one color that often does not present itself well on a computer monitor, primarily because too much brown creates a very dark image that is very hard to see. Good web designers take factors such as this into account when creating color schemes.

■ **DVD head-mounted viewer on the horizon.** A DVD-based headset prototype contains two SVGA displays and connects to either a computer or a portable DVD player, thus immersing the viewer directly into a stereoscopic image. This could be a boon to travelers and students.

■ **Expect monitors to become a more important part of the PC system.** When personal computers first appeared, all monitors did was display video. Today, however, they are expected to do even more. Monitors now often contain stereo speakers, microphones, USB hubs, video cameras, and TV tuning circuits. This will of course make monitors more expensive, but the cost will be made up for not having to buy those peripherals separately.

■ **"Please describe the trouble."** One problem that technical support technicians have when dealing with customers is, they can't see what the customer sees. When computers quit working, customers may not have the technical vocabulary or know-how to describe the trouble in a way that gives the technician the crucial clues needed to

make good (and fast) decisions. One way of dealing with this is DesktopStreaming, an Internet-based system that connects a technician to the user's computer directly. The technician sees the customer's screen content on his own screen, and can even share mouse and keyboard control. This lets the technician do what is needed much, much faster.

■ **Handheld scanner lets you take notes directly into computer.** The QuickLink Pen, by WizCom Technologies, is a handheld digital scanner that lets you scan lines of text from book or magazine directly into computer memory, one line at a time. It handles various sizes of text and stores it in its prodigious internal memory. Later, you can upload your "notes" into your PC via serial port or infra-red link. It runs from two AAA batteries (included) and fits easily into your pocket. One problem with the QuickLink, however, is that it is not very fast when it comes to translating print into digital text (it takes some practice to learn how to hold the scanner so it reads with fewest errors).

INTERNET NEWS

■ **The party is over! "Dot.Com" Internet sector hits bottom!** Example: Priceline.com, the Internet name-your-price travel company was selling for \$95.94 on March 13. On Friday, October 6 it closed at \$5.56, a 94.2% drop, a victim of the big shakeout in Internet stocks! The company recently abandoned its assault into name-your-price groceries and gasoline. It blamed financial problems on their separate WebHouse division.

Priceline founder, Jay Walker saw the value of his stock decrease by more than a billion dollars in six months! Shareholders are enraged and a class action suit has been filed in a Connecticut federal court against Priceline alleging fraudulent statements made about their future profitability.

■ **San Francisco-based Carclub, believes it will pick up lots of new business from Priceline's failure.** Carclub plans to give any of Priceline WebHouse's roughly 2 million members a bonus for signing up for Carclub's \$5.99-per-month service. They offer 10 percent discounts on gasoline bought using their "Gas Master-Card" through the end of the year and 5 percent below pump price next year. Check out <<http://www.carclub.com>>.

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WASHINGTON WHISPERS

■ **New Bill Aimed at Monitoring of Employees - Law would require employers to notify employees of electronic surveillance.** According to a recent American Management Association survey, approximately three-quarters of major U.S. companies monitor employee electronic communications and activities. But not all employees aware of it.

The Notice of Electronic Monitoring Act (introduced in July by Sen. Charles Schumer, D-N.Y., Rep. Charles Canady, R-Fla., and Rep. Bob Barr, R-Ga.) would require employers to notify employees if their electronic communications or computer usage will be monitored. No notice would be required, however, if an employer has reason to believe that a particular employee is engaged in illegal or harmful conduct. Employer violation of the act would result in damages of up to \$20,000 per employee, with a cap of \$500,000 per incident.

■ **The FCC has announced that it has so far received about 1200 low power (10 and 100 watt) FM radio station applications** from non-profit community-based organizations and state and local governments. The new LP-10 and LP-100 FM broadcast service will provide opportunities for new voices to be heard. It is opposed by existing users of the FM broadcast dial on competitive and interference grounds.

The first filing window, from May 30 through June 8, resulted in over 700 LPFM applications from Alaska, California, District of Columbia, Georgia, Indiana, Louisiana, Maine, Mariana Islands, Maryland, Oklahoma, Rhode Island and Utah.

The second filing window (August 28 to September 1) yielded 473 applications from Connecticut (38); Illinois (84); Kansas (36); Michigan (87); Minnesota (63); Mississippi (22); Nevada (23); New Hampshire (28); Puerto Rico (20); Virginia (58); Wyoming (14).

A third five-day filing window is scheduled to begin at the end of November 2000 for eligible organizations from American Samoa, Colorado, Delaware, Hawaii, Idaho, Missouri, New York, Ohio, South Carolina, South Dakota, and Wisconsin. Information on LPFM rules and the application process can be found on the web at <www.fcc.gov/lpfm>.

The fourth filing window is planned for the end of February 2001, and the fifth and final filing window will be held at the

end of May 2001.

■ **Alan Fried of Minneapolis had his micro-radio broadcast equipment seized by the FCC in 1996** after he operated a 20-watt unlicensed alternative music station called "The Beat." He has exhausted his lower-court appeals and is now taking his case to the Supreme Court. Fried claims a constitutional right under First Amendment "free speech" grounds. He says his case is different from others in that he asked for a waiver of the rules, "...but the FCC did not respond whatsoever." Fried said he never received a complaint that it caused interference. It is doubtful that the Supreme Court will hear the case.

■ **It looks like the Microsoft anti-trust case will be around for some years to come.** In a significant setback for the government, the Supreme Court rejected a government request to immediately review the Microsoft antitrust case, delaying efforts to break up the software giant into two separate companies. The high court sent the case, which was brought by the Justice Department and 19 states, back to the U.S. Court of Appeals for the District of Columbia Circuit.

AMATEUR RADIO

■ **The Dayton Amateur Radio Association is now accepting requests for their annual scholarships.** Applicants must be a graduating high school senior in 2001 and have a valid FCC amateur license (any class). The DARK scholarships are awarded in varying amounts up to \$2,000 as determined by the scholarship committee and can be used for tuition at an institution of higher learning as outlined in the application. Applications can be obtained by sending a SASE to: DARK Scholarships, 45 Cinnamon Ct., Springboard, Ohio 45066. Applications must be postmarked no later than June 1, 20001. (Stan Kicked, NY8F, Scholarship Chairman)

■ **The Netherlands is the latest country to proclaim that the Morse requirement should no longer be maintained in exams and as a licensing requirement.** The Dutch position is to wait until the international rules (Article S25) is changed before eliminating all Morse testing. Like many other countries have already done, Holland is attempting to get their regulatory body to lower the Morse requirement to 5 wpm for the time being. An adjustment to SEPT recommendation T/R61-02 which requires 12 wpm is also

necessary and in the works. SEPT recommendation T/R61-01 (which applies to visiting Amateurs) does not need to be changed because no code speed is defined.

■ **Alex DL3KH** (who also holds the U.S. callsign of KE9OE) wants to know **how does a foreign (non citizen) renew his U.S. ham license when he is never assigned a Social Security Number** which is now an FCC-required part of the renewal process?

This is a question that comes up every so often. But since there are so few non-citizen radioamateurs with FCC CALLSIGN, the answer is not readily known or publicized.

Alien operators can indeed be licensed by the FCC. There is no requirement that FCC ham license holders be U.S. citizens. Foreign holders are eligible for a "AGIN" This stands for "Assigned Taxpayer Identification Number" ...a number that is provided by the VEC handling an alien renewal of an FCC license.

When it is time to renew, alien operators should go to the <www.w5yi.org> or <www.QRZ.com> and click on "Renew License." In place of the SSN -- Social Security Number -- (or TIN for Taxpayer ID Number, they are the same thing) just key in the 9-character word "Foreigner" and we will assign and add the AGIN to your renewal. We have been provided a block of AGIN numbers by the FCC expressly for this purpose.

Using the AGIN will also result in a "Licensee ID" being automatically generated and assigned which may be used in place of the SSN/TIN in future license modifications (i.e. corrections, address changes, license upgrades, duplicate license requests, etc.) You will find your Licensee ID -- the so-called "L" number -- in the QR database of amateurs by inserting your callsign at the top of the QR. home page and then clicking on the "More Info" link.

If you have had any kind of FCC licensing "action" since August 1999 (when the new ULS - Universal Licensing System went into effect), you will find your Licensee ID displayed. This applies to all radioamateurs, not just foreign operators. This is a 9-character number beginning with "L." If none is listed, then there has been no recent licensing activity and you MUST use your SSN (or if you do not have one, a AGIN.)

■ **Three foreign aid workers were massacred by pro-Indonesian militia gangs in a West Timor border village last month.** Militias stormed a UNHCR (United Nations High Commissioner for

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Refugees) office stabbing three peacekeepers to death. Two of them were radio-amateurs, Pero Simundza, 9A4SP/4W6SP of Croatia and Carlos Caceres-Collazo, KD4SYB, an American from Puerto Rico. Carlos KD4SYB had sent a desperate e-mail to a U.N. security bureau six hours before the massacre warning that they had heard a mob was en route to destroy the U.N. office. "We are waiting for the enemy," Caceres wrote." World leaders quickly and harshly condemned Indonesia for not doing more to protect the peacekeepers. Witnesses said Indonesian security forces stood by as the mobs torched the U.N. office and beat and killed the workers. Foreign aid workers provide humanitarian assistance to an estimated 90,000 East Timorese refugees housed in West Timor camps. President Clinton and other world leaders called on Indonesia to disarm and disband the militias and to boost security in the region. East Timor was wracked by violence last year following an independence referendum, as militias backed by the Indonesian army destroyed much of the territory. (CNN, Reuters, Associated Press)

■ **The city of Brookline, Mass has enacted an ordinance that effectively prohibits using mobile or HT Amateur Radio communications in an automobile.** A new Section 7.5.20 reads: "**Telephone use in vehicles.** No person, except for public safety personnel while on duty, shall use or operate a hand-held telephone, including a so-called cellular telephone and similar hand held device, while operating a motor vehicle on any street." (Thanks, Mort W1UQ.)

■ **Space station is almost ready for human habitation.** Space shuttle mission, STS-92 which roared into space on October 11 is commanded by Astronaut Brian Duffy (Colonel, USAF) from Seabrook, Texas.

It was the 100th shuttle mission in a series which began in 1981. STS-92 is the third Space Shuttle mission to assemble the International Space Station (ISS). It will deliver and install the truss and docking port.

The 11-day mission has been on hold for two years because of Russia's difficulties in launching the space station's crew quarters. The module was finally placed in orbit in July and was outfitted by a visiting space shuttle crew in September.

A veteran of three space flights, Duffy is also a ham operator, N5WQW (Technician.) He has logged over 5,000 hours of flight time in more than 25 different air-

craft ...over 667 hours in space.

Another ham operator, NASA astronaut Bill Shepherd, KD5GSL (Capt., USN) and his two-cosmonaut crew are scheduled to lift off from Kazakhstan on Oct. 30. They will be the first crew to take up residence (4 months) on the ISS.

■ **HB-6012, a bill introduced on Sept. 27th by Michigan Rep. Mike Kowall** originally made it a crime for "A person to equip a vehicle with a radio receiver, or possess in a vehicle a portable radio receiver, that receives radio frequencies assigned by the FCC for police purposes...." unless the operator has obtained a permit from the Michigan State Police. The bill has now been amended to exempt Amateur Radio operators from the permit requirement.

■ **Amateur Radio Enforcement:** The FCC has asked **Alan J. Koepke K1JCL (Coventry, CT)** to explain his AM repeater operating on 144.65 MHz. which is causing interference to coordinated repeaters in Massachusetts and New York. The FCC said that even a coordinated repeater operating contrary to coordination parameters is still uncoordinated. He was also asked to explain the justification for reversing the input and output frequencies from the generally accepted band plan.

■ **Robert L. Meyers N5WLY (Houston, TX)** has entered into a Consent Decree in which he agrees to submit his Amateur Radio license for cancellation and not reapply for a license for 5 years. In addition he will pay a voluntary contribution to the U.S. Treasury in the amount of \$1,000. Meyers had previously been fined \$8,000 for interfering with the Memorial Emergency Repeater Association operating on 145.47/144.87. The Consent Decree terminates the enforcement proceeding and is not an admission of guilt by Meyers.

■ The FCC has asked **Ruffin E. Smith KE4SVC (Danielsville, CA)**, **Brett C. Rogers KF6ZDS (Long Beach, CA)** and **Milton O. Rothery, Jr KU4JH (Comer, GA)** to respond within 30 days to the allegation that they have been illegally operating radio equipment on or between CB frequencies.

■ **Albert J. Semonia KB9SFA (Aurora, IL)** had his Amateur Radio license canceled by the FCC for failure to retake his Technician Class examination as ordered on July 12, 2000.

■ **Ramon C. Irizarry KP4NF (Vega Baja, PR)** has been warned that he (or someone using his call sign) has been oper-

ating in the SSB mode on 7.114 MHz, a frequency reserved for CW, RTTY and data. **Richard W. Parker KB2DMD (Rochester, NY)** was similarly cautioned for operating on 3.885 MHz "...a frequency not licensed to you under your Novice license." The call sign of **Paul A.R. Wusow WB9SFA (Naperville, IL)** was monitored on CW on 14.0248 kHz - a frequency not licensed to Technician Plus operators.

■ The FCC says monitoring information indicates that **William R. Cary K8CSG (Houston, TX)** may be using Club Call W4URF of which he is trustee "for purposes other than those of the club on which we based the grant." He was asked to provide justification for the club call sign.

■ **Jose M. Chavez KE4ZUD (Homestead, FL)** has been issued a final warning (before license revocation proceedings are initiated by the FCC) stating that he has been monitored operating in the Advanced and Extra Class portion of the 40-meter ham band even though his license was downgraded from Extra to General Class operating privileges on Nov. 30, 1999.

■ **William Agosto, Jr. N2YAG (Deerfield, FL)** has been asked to respond with 20 days to charges that he has been causing interference to Delray Beach police communications by crossbanding a repeater operating on 147.225 MHz to the police system's Channel 2 (471.012/474.0125 MHz.) Agosto was given 20 days to give full details of the cross-banded transmissions in order for the FCC "to determine what action to take regarding your qualifications to hold an Amateur license."

■ The FCC has asked **Hal Raish N6AVX (La Habra, CA)** to state what action he is taking to eliminate the second harmonic interference his 223.920 MHz repeater frequency is causing to the Saddle Peak repeater in Malibu, CA.

■ **Joseph E. Mattern WW4WJD (Orlando, FL)** has been ordered to retake the Technician Class and 5 wpm code exam at the FCC office in Tampa, FL

■ **Glen Timmerman (Las Vegas, NV)** of "Citipage Plus WNMM584" has again been notified that his paging system is interfering with N7OK - a repeater operating on 147.090 MHz. "The interference is apparently being caused by the mixing of your signal at 152.40 MHz ...with the 157.74 output of paging system WPAV492..." Timmerman was again asked to contact Tim Hunt, the service person for N7OK and to "cooperate in resolving this matter."

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U.S. LAGS ON HIGH SPEED WIRELESS TECHNOLOGY

The good news is that the Internet is going wireless. The bad news is that U.S. telecom companies are playing catch up, while their European and Asian counterparts lead the way.

Telecom companies throughout Europe are in the process of investing up to \$300 billion to unite the mobile telephone with the Internet. If the "third generation" (3G) mobile Internet takes off, then Europe and Japan will be ahead of the United States in the adoption of a glamorous new technology.

Finland's Nokia, the world's leading supplier of cellular handsets, is already shipping in Europe one of the first mobile phones capable of accessing information on the Internet. Finland allocated its third-generation spectrum licenses in March 1999. The United States is not scheduled to auction off 3G spectrum until Sept. 2002.

Mobile phone penetration in the U.S. today is 25 percent compared to 60 percent in some European countries. And 40 percent of U.S. users are still on analog networks. Digital networks are the norm in Europe and Asia. To make matters worse, the U.S. digital market is divided among different standards.

The lead could give European and Asian companies an important advantage in developing next-generation wireless products and services. 3G mobile technology will let subscribers, for example, watch videos or play music over mobile phones. At stake is a rapidly growing, global market with as many as 400 million users accessing the Internet from wireless devices by 2004.

Earlier this year, the World Radiocommunication Conference specified three spectrum areas for potential third-generation (3G) high-speed wireless communications. Today's wireless devices can only transmit voice and brief text messages and cannot handle digital multimedia and other broadband content.

The problem is that spectrum bands under consideration in the U.S. are currently used by analog cellular service providers, the military and various wireless users and satellite broadcasters. Other countries do not have that problem.

President Clinton has now ordered government agencies to work with the FCC and the private sector to expedite adoption of 3G wireless technology. Clinton wants the commerce department to develop a plan for high-speed wireless systems and to issue an interim status report by Nov. 15.

On October 12th, the FCC allocated 50 MHz (3,650 to 3,700 MHz) of Government spectrum to non-government fixed and mobile commercial wireless use including access to the Internet. The Commission also seeks comment on pairing this 50 MHz of spectrum with the 50 MHz available in the 4,940 MHz - 4,990 MHz band.

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MULTI-LEVEL MARKETERS HEAD TO THE INTERNET

"Legislation and court cases have defined pyramid schemes as plans which concentrate on commissions earned for recruiting new distributors and which generally ignore the marketing and selling of products and services."

Up until recently most multi-level marketing sales took place through face-to-face selling in the home or work place. But that is changing. Names like Amway, Avon Products, Electrolux Corp., Fuller Brush, Mary Kay, Rexall, Saladmaster, Shaklee Corp., Stanley Home Prod., Tupperware, World Book Encyclopedia and a host of other multi-level marketers (MLM) all have a huge presence on the Web.

Multi-level marketing used to be based upon the idea of each person involved selling only to his or her friends, with each of these people in turn, introducing their friends into the program ...an "endless chain" concept.

Knocking on doors, the Avon lady was lucky if she made a dozen sales calls a day. Although mass mailings - spam - is generally prohibited, email and websites have access to millions of potential customers. Personal contact and "party plans" are now giving way to e-marketing.

Actually multi-level marking companies do not like that term. They prefer to refer to what they do as "networking" or "matrix marketing." The MLM firm that is receiving the most publicity (good and bad) is an online firm that practically no one has previously heard about.

Quixtar (pronounced "Quick Star") has only been around a year but they are already reporting daily sales exceeding \$2 million. And it is already a multi-billion dollar business. Who are they ...where did they come from?

In a sentence, they are the Internet-based equivalent of Amway. Their success can be traced to the Internet's capacity to quickly communicate with the world. Nearly half a million independent distributors form their sales force.

Microsoft, IBM, Intel and Compaq form Quixtar's development team. Quixtar has been so successful that they have had constant trouble keeping the site up and running. Microsoft has had to rush in more servers and they now have close to 100 servers online.

Like in all MLM schemes, real success is built on recruiting ("pyramiding" - a hated word) others to sell the product. People who are recruited to become Quixtar distributors are not told that the company is actually Amway. In fact, they're doing their level best to distance themselves from Amway. Quixtar says they are not Amway, but Amway is certainly the cornerstone.

Quixtar and Amway are owned by the same families, both call their top distributors by the same names: Diamond, Emerald, Platinum..., share the same business rules, use the same domain servers and are both located in the Grand Rapids area of Michigan. If it walks like a duck...

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Actually Quixtar is owned by the sons of Amway founders, Richard DeVos and Jay Van Andel. They chose the name Quixtar (rather than Amway Online, for example) to give the firm new life. The Amway name was getting old and tarnished. Quixtar is the marketing equivalent of a fresh start ...Amway in cyberspace.

But Amway isn't the first big company to sell products under another name. AT&T and MCI, for instance, offer discount dial-around services that don't identify their affiliations.

You will be hearing a lot more about Quixtar. They have hired two ad agencies, and TV commercials, billboard and print ads are being tested.

Like Amway, Quixtar conducts regional motivational functions (seminars) which are filled with examples of riches and buzz words like "business-to-business transactions", B2B ... "tri-digital business" success. They claim Quixtar 'diamonds' - as the top level is called - make \$250,000 a year and "...anybody who just works hard enough employing these simple techniques will one day be a Diamond." But extremely few people ever rise to that level. Drop-outs - more than an estimated 50 percent -- are labeled "losers" and "quitters."

The upline levels (the Diamonds, Emeralds, and Platinums) usually do not sell the product but they still get a cut of the revenue. They spend their time peddling their success (and motivational books and tapes) at the "opportunity functions."

Amway distributors typically order, store and deliver products to customers and to distributors they recruit. Quixtar distributors need only refer people to the site, where they'll place orders.

Customers are supposed to enter a distributor's ID number when they buy something. If they don't, a randomly chosen distributor in the customer's ZIP code will get the commission. Sales commissions without selling... Something for nothing.

Multi-Level Marketing vs. a Pyramid Scheme?

Whether a program is a legitimate multilevel marketing plan or an illegal pyramid scheme depends principally on the method by which the products or services are sold; and the manner in which sales participants are compensated.

Essentially, if a marketing plan compensates independent sales people for their own sales and sales by their "recruits" (called "downliners") that plan is "multi-level." If a program compensates participants for the enrollment of other participants into the program, it is an illegal pyramid scheme.

Why is pyramiding prohibited? Because plans (like "chain letters") that pay commissions for recruiting new distributors inevitably collapse when no new distributors are recruited. And when a plan collapses, most people --

except perhaps those at the very top of the pyramid -- lose their money. .

Multi-Level Marketing opportunities can be considered a franchise which permits personal consumption of products at a wholesale price, retail sales to others and the recruiting of downline distributors on whose sales you are paid a piece of the action.

In short, a "Pyramid Plan" is a program which pays participants to recruit others to join for the opportunity to sell a product. You can't sell distributorships. All MLM compensation must be related to the sale of products to the ultimate user rather than the enrollment of new distributors. It is illegal for distributors to approach potential sales people and offer a "sales opportunity" rather than "opportunity to sell a product." A thin line indeed.

But the fact remains that while all MLM companies compensate their distributors for "sales," it is the addition of downline salespeople where distributors become ultra-successful. MLM is the "Penny Stock" of business opportunities. It is a cheap, inexpensive way to have "a business."

MLM is regulated by the Federal Trade Commission (600 Pennsylvania Ave. NW, Washington, DC 20580 -- Tel. 1-877-FTC-HELP (1-877-382-4357.) The FTC says "if the emphasis is on income from a downline of distributors you would have to recruit, not on the sale of products, it may still be a de facto pyramid scheme. Your odds of success in such a program are not good. While less than 1% of the distributors at the top of the pyramid will be rewarded handsomely, 99% of distributors beneath them may come away empty - most actually losing money, after subtracting expenses and product purchases." Some researchers estimate that less than 1% of MLM distributors ever turn a profit.

But if you still want to check out Quixtar's website, it is located at <<http://www.quixtar.com>>. It costs \$19.95 to become a Quixtar member. For that you can purchase products at special cost and get to set up your own (very tightly controlled by Quixtar) home page. It is questionable, however, whether the discounted retails are less than those offered by such nationwide discounters as Wal-Mart or Costco. Quixtar also has an online slide show that promotes becoming one of their IBOs, Independent Business Owners.

A word to the wise. Before you sign up, we suggest you check out "Amway and Quixtar" by entering those keywords (complete with the quote marks and the word "and") into various Web search engines. (i.e.: AltaVista - Deja - Fast - Google - HotBot - Infoseek - Looksmart - Lycos - Northern Light - Yahoo, etc.) Especially check: <<http://www.awod.com/gallery/rwaw/slarsen/amway.html>>

The Amway and Quixtar business is surrounded by considerable controversy. And not everyone is a supporter of this company.